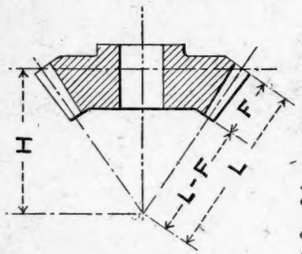
STRENGTH OF GEARS.—IV.

Strength of Bevel Gears.
According to Lewis and Carl G. Barth.

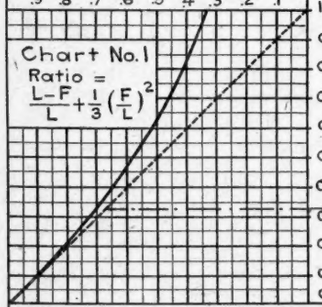


To find the strength of a bevel gear; multiply its number of teeth by L/H and find the strength of a spur gear of this number of teeth and of the same pitch and face as the bevel gear; multiply the strength of this spur gear by the ratio given in chart No.1 below.

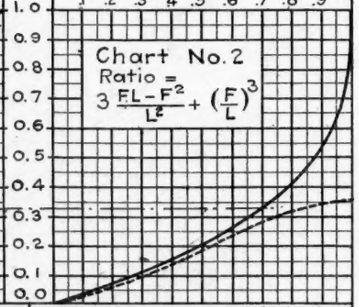
For face widths within the limits of good practice this ratio may be taken as equal to $\frac{L-F}{L}$

$\frac{F}{L}$	Ratio in Chart No.1	$\frac{F}{L}$	Ratio in Chart No.1	$\frac{F}{L}$	Ratio in Chart No.2	$\frac{F}{L}$	Ratio in Chart No.2
0.1	.9033	0.6	.5200	0.1	.2710	0.6	.9360
0.2	.8133	0.7	.4633	0.2	.4880	0.7	.9730
0.3	.7300	0.8	.4133	0.3	.6570	0.8	.9920
0.4	.6533	0.9	.3700	0.4	.7840	0.9	.9990
0.5	.5833	1.0	.3333	0.5	.8750	1.0	1.000

Ratio of strength of bevel gear to strength of spur gear of same pitch and face



Ratio of strength of bevel gear of face "F" to strength of bevel gear of face "L"



The dotted line indicates the ratio $\frac{L-F}{L}$ *showing that for general use this is near enough to the true ratio for values of* F/L *not exceeding* $1/3$*, which may be considered the limit of good practice*

This diagram shows that when $F/L = 1/3$ *there has then been developed .7 of the theoretical strength of the total cone. The dotted line indicates the probable practical results, showing folly of making F more than* $\frac{1}{3}L$

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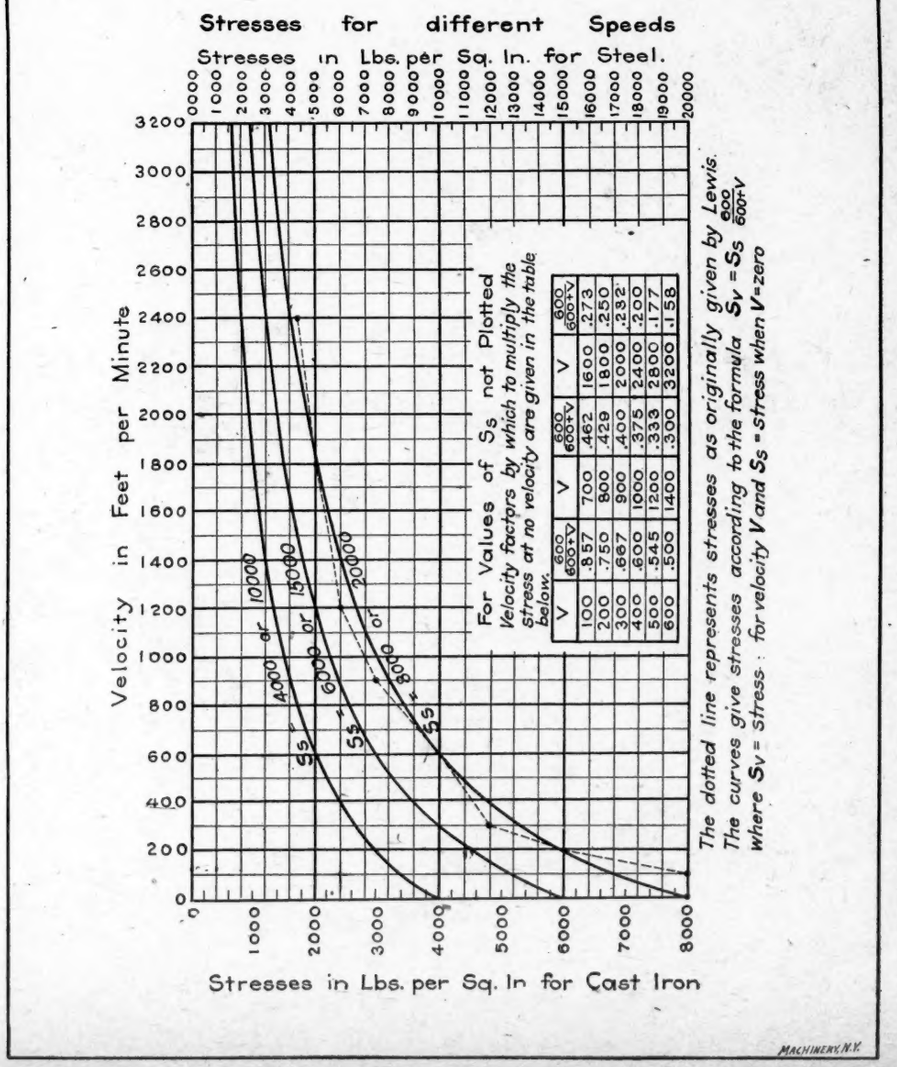
STRENGTH OF GEARS.—III.



The dotted line represents stresses as originally given by Lewis. The curves give stresses according to the formula $S_V = S_S \frac{600}{600+V}$ *where* S_V *= stress : for velocity V and* S_S *= stress when V = zero*

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